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FAO Plant Protection Bulletin

Vol. I, No. 5 A Publication of the February 1953

World Reporting Service on Plant Diseases and Pests

International Plant Protection Convention:

its history, objectives and present status

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The need for a new broad international agreement on plant protection to replace the obsolete International Convention for the Protection of Plants signed at Rome in 1929 and the Phylloxera Convention signed at Berne in 1881, first came before the FAO Conference at its Fifth Session in 1949. The new International Plant Protection Convention thus developed was approved by the FAO Conference in 1951, and has been signed and adhered to by thirty-nine countries.

Since this Convention, as an effort to advance international co-operation in combating dangerous plant pests and diseases, is of interest to all concerned with protecting plant resources, the present notes outlining its historical background, objectives and present status are intended for general information.

Historical Background

International Convention of 1929. The old International Convention for the Protection of Plants was signed in 1929 in Rome but its origin can be traced back to the last century. In 1891, at the International Congress at The Hague, the late Professor Rostrup called attention to the need of means for preventing the introduction of epidemic diseases through the importation of living plants or seeds infected by parasites. This problem was presented again and fully discussed in several succeeding international meetings.

Concerted action, however, was not taken until 1914, when the International Conference of Phytopathology was held in Rome. The Conference adopted a final Act, dated 4 March 1914, providing the basis for international co-operation in plant protection. The 1914 Act was never put into effect by any government, as its formulation was immediately followed by the first World War. Only after a long lapse was this Act again brought to the attention of different nations through proposals by the Italian and other governments for its revival and modification.

When the International Plant Protection Conference was held in April 1929, the former International Institute of Agriculture submitted a draft of the International Convention for the Protection of Plants, embodying all of the suggestions received from various governments for modification of the 1914 Act. After much discussion, the Conference adopted a final draft of this Convention which was signed by 26 out of 46 participating countries. Of these, 12 countries ratified the Convention. Later, five additional countries adhered to it.

Owing to the limited number of countries that ratified the 1929 Convention its usefulness was restricted in many aspects. Furthermore, the sciences of plant protection have progressed so rapidly that the many concepts relating to the control of plant pests and diseases have been changed. Another fact which caused even more concern

was the accelerated speed of modern transport that has greatly reduced dependability of natural barriers between countries and continents as a defence against the spread of plant pests, thus endangering crop industries by increasing the possibilities of introducing destructive pests from distant localities.

Phylloxera Convention. The grape phylloxera was introduced into France with importations of American grapes about 1859 and, during the following twenty years, spread from France to other countries in Central Europe as far eastward as the Black Sea District of Russia. Vineyards were destroyed over wide areas in the countries reached by the pest.

The importance of the wine industry in many of these countries led to great activity in the study of control and a good deal of discussion was directed to the possibility of preventing further introductions from the New World and the spread between countries of Europe through restrictions on movement of grapevines and grape products by legislative measures. Such deliberations reached a final stage in the Phylloxera Convention, the result of the work of an international conference held at Berne in November 1881. It was signed on 3 November 1881 by five countries and was later adhered to by twelve countries.

In the seventy years following this Convention, the picture of grape phylloxera in Europe has changed a great deal. The vineyards in most of the countries infested by the pest have been reconstructed by the use of resistant American vines as grafting stocks. Various measures adopted to eradicate this insect, such as soil fumigation, have also helped to check its spread.

Also during this period most countries in Europe have established plant protection services to combat important diseases and pests occurring within their boundaries and have organized quarantine systems to safeguard the importation of plant materials. On the other hand, the rigid restriction imposed on the circulation of vine cuttings by the Phylloxera Convention actually handicapped the progress of viticulture in the countries concerned, and scientific studies proved that vine cuttings without roots are unlikely to serve as a means of spreading the insect. For these reasons even the adhering countries have tended to disregard the Convention in recent years.

During the Third International Congress of Raisins and Wine in Istanbul in October 1947, the question of revising the Phylloxera Convention was raised and was referred to the Committee of the Office International du Vin for examination. The Committee adopted a resolution that the signatory states of the Phylloxera Convention be invited to withdraw from the Convention, and that the vine-growing countries, members or non-members of O.I.V. be invited to adhere to the International Plant Protection Convention, then in the process of formulation by FAO.

Development of the New Convention

The FAO Conference, in realizing the obsolete nature of the two previous conventions, recommended at its Fifth Session in 1949 that FAO call a meeting of specialists to consider the desirability of modifying them. Accordingly, a conference took place at The Hague between 26 April and 3 May 1950, convened jointly by FAO and the Netherlands Government, at which thirty-five countries were represented. The Hague Conference accepted in principle the draft of the International Plant Protection Convention submitted by FAO and recommended a number of alterations.

The draft Convention was then further considered by a panel of plant protection officials of Canada and the United States at an informal meeting in June 1950 and later was submitted to a number of specialists for comments.

The Convention, as revised in accordance with all the suggestions received, was placed before the Special Session of the FAO Conference, 1950, which determined that final action be postponed until the 1951 Conference, in compliance with the wishes of a number of Member Governments for further time to consider details and to propose amendments.

After the 1950 Conference, views and comments regarding the proposed Convention were received from twenty-seven Governments and were summarized and circulated to all FAO Member Nations for consideration.

In accordance with the Conference directives, another meeting of specialists was convened in September 1951 to examine further the proposed draft. The meeting, attended by representatives of twenty–three countries, co–ordinated the views expressed by various governments and agreed upon a final draft which was regarded as technically satisfactory.

This final draft of the International Plant Protection Convention was considered and approved by the FAO Conference at its Sixth Session in Rome, November–December 1951, which recommended FAO Member Nations to sign at the earliest possible date and not later than 1 May 1952.

Objectives and Scope

The International Plant Protection Convention of 1951 has as its aim the strengthening of international efforts in combating important pests and diseases affecting plants and plant products and in preventing their spread across national boundaries. It comprises fifteen articles, the more important provisions being as follows:

(1) *Supplementary agreements.* It is realized that the Convention, aiming at world–wide application, cannot possibly embody all the specific problems in plant protection. In its present form, it provides only a broad framework adaptable to changing conditions in the field of plant protection, but under its framework supplementary agreements may be formulated to deal in detail with problems restricted to certain geographic areas or to certain specific subjects of international importance. This provision paves the way to further international co–operation under a co–ordinated structure.

(2) *National plant protection organization.* As a prerequisite to the combating of dangerous pests and diseases in an effective way, the Convention requires that contracting governments set up, to the best of their ability, a satisfactory national plant protection organization, equipped to carry out survey and inspection of growing plants as well as plant materials in trade, to disinfest or disinfect plant materials moving in international traffic, and to strengthen advisory service and research in the field of plant protection.

(3) *Plant quarantine.* To remedy the present diverse restrictions imposed by different countries for the importation of plant materials, uniform regulatory and quarantine procedures and a model phytosanitary certificate are provided in the Convention. This model certificate shall be used by all the contracting governments for plant materials intended for planting or propagation, and may also be adopted for other materials under appropriate conditions. The Convention lays special emphasis on the undesirability of adopting any quarantine measures unless they are based upon phytosanitary considerations.

(4) *World Reporting Service.* Realizing that any efforts leading to international co–operation on plant protection would be handicapped without better understanding between nations on the distribution of plant pests and diseases in different areas, the Convention requires contracting governments to co–operate with FAO in establishing a World Reporting Service on Plant Diseases and Pests. This Service undertakes to collect and disseminate information on the incidence, spread and control of plant pests and diseases of economic importance.

(5) *Regional organizations.* It is recognized that relatively few plant pests and diseases are of global importance, and most countries are naturally more concerned about what occurs in adjacent areas confronted with common problems. In order to promote and co–ordinate more effectively the plant protection activities in different geographic areas, the Convention provides the establishment of regional plant protection organizations which will participate in various activities provided by the Convention.

(6) *Settlement of disputes.* Should any dispute arise between contracting governments regarding the basis of prohibiting or restricting the imports of plant materials, the interpretation or application of the provisions of the Convention, or any other related problems, a committee of experts may be formed by FAO, at the request of the goverments involved. The recommendations of such a committee will constitute the basis for renewed consideration by the governments concerned of the problems causing the disagreement.

(7) *Administration of the Convention.* Under the Convention, FAO, rather than a

signatory government, acts as the depository of the Convention and administers its provisions. When amendments become necessary, the proposals can be considered by the FAO Conference. This proviso dispenses with cumbersome diplomatic procedures.

Present Status

The Convention was open for signature by all governments until 1 May 1952. Before that date, it was signed by the following thirty-seven FAO Member Nations:

Australia
Austria
Belgium
Brazil
Canada
Ceylon
Chile
Colombia
Costa Rica
Cuba
Denmark
Ecuador
Egypt
El Salvador
France
Germany (Federal Republic)
Guatemala
India
Indonesia
Ireland
Israel
Italy
Japan
Luxembourg
Netherlands
New Zealand
Philippines
Portugal
Spain
Sweden
Switzerland
Thailand
Union of South Africa
United Kingdom
United States
Uruguay
Yugoslavia

Among these signatories, Ceylon, Spain, Chile and India indicated that the signatures of their representatives were not subject to ratification. In accordance with the provisions of the Convention it first came into force between Ceylon, Spain and Chile on 3 April 1952, date of signature by the representative of Chile.

Before the end of 1952, six other signatory governments, i. e. Sweden, Belgium, Japan, Australia, New Zealand and Austria had deposited their instruments of ratification with the Director-General of FAO. Most of the other signatory governments are also in the process of ratification.

In addition to the countries listed above, the Governments of Cambodia and Dominican Republic have deposited the instruments of adherence.

At the time of writing, including both signatory and adhering members, the following twelve countries are parties to the Convention: Ceylon, Spain, Chile, India, Sweden, Belgium, Japan, Australia, New Zealand, Austria, Cambodia, and Dominican Republic.

Although all governments which are not members of FAO have also been invited to sign or adhere to the Convention, unfortunately, none has yet accepted the invitation.

Plant Disease Situation in the United States

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dne, 32, P521

Control of Dutch Elm Disease

With the abandonment of the eradication program for the Dutch elm disease (*Ceratostomella ulmi* Buism.), the eventual fate of elms in affected areas became a matter of concern. Especially is this true in the New England States, where elm-lined avenues have been a matter of pride for generations. By far the greater number of elms used as street trees are of the susceptible American species (*Ulmus americana*).

Evidence that continued sanitation suppresses the disease and saves the elms is furnished in a report from the Shade Tree Laboratories of the University of Massachusetts, summarizing the history of the disease under different treatments in two comparable towns in Massachusetts. The two towns are Amherst and Easthampton, about ten miles apart in the Connecticut River Valley. Amherst has sustained a vigorous effort to protect its elms; Easthampton made an equally good effort for a few years after which control was neglected.

Amherst is a college town of about 8,500 population; it is 27.5 square miles in area and has 72 miles of town roads. A 1952 census listed 2,094 roadside elms, which are the responsibility of the town to maintain. The Dutch elm disease was first discovered in Amherst in 1948. From then until the end of June 1950, the town was scouted thoroughly for the disease at least once a year by the Shade Tree Laboratories. During the remainder of 1950 and 1951, the town tree department did most of the scouting. A practical sanitation program was instituted early and has been sustained. All known diseased elms have been eradicated as promptly as possible, with priority given to diseased trees located near concentrations of desirable elms. Diseased wild elms were also disposed of. In 1952, for the first time, street elms were sprayed with DDT for protection against elm bark beetles; prior to that spraying was done in certain areas for control of elm leaf beetles only.

Easthampton is an industrial town of about 10,700 population, with an area of 14 square miles and 67 miles of town roads. According to a 1952 census there were about 965 roadside elms within the town. The Dutch elm disease was first found in Easthampton in 1947. Until 30 June 1950, trained scouts surveyed the town thoroughly at least once a year. During this time the town tree department was active in eradicating diseased trees. Apparently, during the rest of 1950 and in 1951, little was done either to locate new infections or to remove obviously diseased trees unless they became a safety hazard. In 1952, interest in preserving the elms was renewed, but the two years of neglect had a striking effect on the town's roadside elm population.

In the spring of 1952 a census was taken in both towns of all elms, two inches or more in diameter, that are the responsibility of the local tree officers. The original number of street elms was approximated by adding to the 1952 census figures all the street elms known to have been confirmed for Dutch elm disease prior to 1952. This figure was used for calculating the percentage of roadside elms affected since the disease first appeared in each town. During the summer of 1952 each town was scouted thoroughly three times for Dutch elm disease.

The numbers of known affected street elms in each town, year by year, are given in Table 1. During the whole period that the disease has been present, Amherst has lost 109, or 4.9 percent, of its original 2,183

street elms, whereas Easthampton has lost 122, or 12.4 percent, of an original 981. Of course the disease appeared a year earlier in Easthampton. On the other hand, if Easthampton had been adequately scouted in 1950 and 1951 its total of confirmed diseased trees would undoubtedly be appreciably higher. The 1952 surveys would not account for unconfirmed diseased elms removed during these two years nor for standing dead trees in which the fungus had died out by summer 1952. In spite of this imperfect record in Easthampton, the average annual incidence of Dutch elm disease there has been more than 2 percent, compared with 1 percent for Amherst.

Table 1. *The progress of Dutch elm disease in two Massachusetts towns.*

Year	Roadside elms diseased in			
	Amherst		Easthampton	
	Number	Percent	Number	Percent
1947	*Disease not present*		3	0.3
1948	2	0.08	9	0.9
1949	23	1.0	4	0.4
1950	46	2.1	0	0.0
1951	18	0.85	*No records*	
1952	20	0.99	106	11.0
Total	109	5.02	122	12.6

Money allotted for general tree care and Dutch elm disease control averaged $ 6,530 per year for the five years that the disease has been present in Amherst, and $ 5,311 per year for six years in Easthampton. This amounts to approximately $ 3 per year per street elm for Amherst, and about $ 5.40 per year per street elm for Easthampton. No matter how it is figured, the cost of two years of neglect has been high for Easthampton; both in money expended and elms lost.

There are good reasons to consider proper spraying with DDT a valuable adjunct to sanitation. In some places it is claimed that the Dutch elm disease has been reduced to a status equal to other elm diseases by a program of sanitation and spraying.

On the campus of the University of Massachusetts at Amherst, there are approximately 493 elms, which are pruned regularly to remove dead wood, fed as necessary, and given dormant and foliar sprays with DDT to control elm bark beetles and elm leaf beetles. Only one elm on the campus has been affected, in spite of the presence of Dutch elm disease in the surrounding town for five years. This excellent record may be partly due to the spray program, but it is questionable whether such a low degree of disease incidence could have been maintained on the campus without the diligent sanitation program of the town of Amherst.

The example of the two towns is a case for an intelligent sustained program to control Dutch elm disease. It shows how much disease control can be attained by practical sanitation alone. The emphasis should be on a sustained program, since the figures show that the disease can spread enormously, in as short time as two years, when control efforts slacken.

Chlorotic Streak of Pennisetum in Puerto Rico

In May 1952, typical symptoms of chlorotic streak disease were observed in a plot of *Pennisetum purpureum* in the midst of sugarcane (*Saccharum* spp.) on low level land near Central Coloso, Puerto Rico. In August, specimens of *P. purpureum* showing similar symptoms were found on the Puerto Rico Agricultural Experiment Station, Rio Piedras.

Cuttings were made from the lower portion of the stem to determine the possible virus nature of the disease. One piece of each stem was planted untreated, and one was given the treatment that eliminates the sugarcane chlorotic streak virus from sugarcane cuttings, *i. e.*, immersion in water at 52° C. for 20 minutes. No injury and no symptoms were observed on 65 shoots from the treated seed pieces. Chlorotic streak appeared in 15 of 63 shoots from untreated cuttings. This indicates that the chlorotic streak disease of *P. purpureum* is due to a virus, but whether the virus is the same as the one causing chlorotic streak disease of cultivated sugarcane is not known.

Pratylenchus in Sugarcane Roots

Roots of sugarcane plants, variety C. P. 44/101, from a Louisiana field affected with the recently discovered *Sclerospora* disease (species undetermined) were observed to be in a badly deteriorated condition. Examination revealed a large population of nematodes identified as a species of *Pratylenchus*. The most severely stunted plants, containing oospores of *Sclerospora*, had practically no roots. Larger, better developed plants had more extensive root systems, but with abnormally few small roots which were blunt, coarse and showed characteristic brown lesions. Numbers of nematodes present, as determined in samples of roots from plants selected at random in the field where the *Sclerospora* disease occurred, varied from 10 to 120. The lowest numbers were found in the most severely affected root systems, indicating that perhaps some of the nematodes may have left prior to the death of the roots. The relation, if any, of the nematodes to the *Sclerospora* disease has not been determined.

Digest of Plant Quarantine Regulations

This new edition of the Digest published as Agriculture Development Paper No. 23, supplies the latest information on plant quarantine legislation. It summarizes the plant quarantine laws and regulations of 40 countries, some as recent as October 1952. The contents of the original edition of 1949 have been completely revised and new material has been added. The volume is a convenient size and designed for quick and easy reference.

For certain countries, which intend to establish a system for plant quarantine and inspection in their own territories or to improve an existing service, this Digest may serve to indicate procedures and measures which might be taken, and the problems which might be considered. In addition, it may be used as a reference by plant protection officials and other persons who are concerned with the import and export of plants and plant products. It is priced at $ 2.00 or 10/–.

Virus Diseases of Cereals in Canada

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Streak Mosaic of Wheat

A virus disease of wheat apparently identical with streak mosaic was found for the first time by J. T. Slykhuis in southern Alberta in 1952. Both winter and spring varieties were affected. The yellow and mild streak mosaics were described by McKinney [1] from material collected in 1932 in Kansas. Since then the combined viruses have caused severe damage in some winter wheat areas in the Great Plains region of the United States.

The symptoms of streak mosaic include greenish–yellow to yellow streaks, interrupted or continuous and parallel to the leaf veins. Entire leaves may become chlorotic. The affected plants are usually stunted, and the yield and quality of the grain are reduced.

Severe damage from streak mosaic was observed in several fields of winter wheat in the Cardston and Pincher Creek districts of Alberta and in some fields the crop was not worth harvesting. These particular fields were sown early in August in 1951 near crops that evidently had carried infection. Other fields suffered reduction in yield, but the losses became progressively less the longer seeding was delayed as the number of infected plants and the severity of infection on individual plants declined. Some mosaic–infected plants were present in late fields, but the losses were negligible. Streak mosaic was also found in many fields of spring wheat in areas where winter wheat was grown. Infections sufficiently heavy to cause severe damage occurred only in spring wheat growing near infected winter wheat.

In the fall of 1952, streak mosaic occurred in many fields of winter wheat sown in August and early September. Volunteer wheat plants growing in either summer fallow or stubble fields have proved to be a real menace to the new crop, whether they occur in the same or adjacent fields. These plants become infected with the disease in late summer or early autumn and are sources of infection for the early–sown crops of winter wheat in the vicinity. The virus was readily transmitted manually in the greenhouse at Lethbridge.

False Stripe of Barley

In contrast to streak mosaic of wheat, false stripe of barley has been known in Canada since 1924, although its virus nature was only recently demonstrated. However, McKinney [2] presented circumstantial evidence that the disease was present on barley at Madison, Wisconsin, in 1913. Using material collected at St. Paul, Minnesota, in 1950, McKinney showed that false stripe is caused by a seed–borne virus and that the virus can be transferred mechanically.

In Canada, false stripe was named and described quite independently for a disease of barley observed in the variety plots at Brandon, Manitoba [3]. The name was suggested by the similarity of the brown–bordered necrotic stripes in the leaves to those caused by the true stripe organism, *Helminthosporium gramineum*, but the fungus was never found sporulating on the lesions and the affected plants regularly formed heads containing grain. Over the years the disease seems to have been observed widely in Canada and the northern United States.

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[1] MCKINNEY, H. H. *Mosaic disease of wheat and related cereals.* U. S. Dept. Agr. Circular 142. 1937.

[2] MCKINNEY, H. H. A seed–borne virus causing false stripe symptoms in barley. U. S. Dept. Agr. Pl. Dis. Reptr. 35:48. 1951.

[3] Canada Dept. Agr. Bull. n. s. 71:13. 1926,

In July 1951, the findings of McKinney were confirmed by W. A. F. Hagborg at the Winnipeg laboratory, the false stripe virus being successfully transferred from leaves of Hannchen barley collected in a local field plot to seedlings of wheat, barley, and rye, but not to those of oats. The symptoms of the disease on wheat and barley agree well with those described by McKinney. In wheat, the systemic symptoms " chiefly of light yellow to bleached continuous or broken stripes " are sometimes so severe that the leaf turns almost white. In barley, the leaves develop, in addition, brown necrotic stripes. When headed wheat plants, not yet in flower, were inoculated, dark discolorations appeared on the internodes and leaf sheaths and small necrotic areas developed on the glumes. Leaf blades became chlorotic and necrotic, resulting in their early death.

A marked reduction was demonstrated in the yield and kernel weight of grain produced on diseased plants, which were grown in the field at Winnipeg in 1952. Both wheat and barley plants were dwarfed; other symptoms of the disease were obscured as the plants approached maturity. Transmission of the virus through the seed produced on systemically infected plants was also amply demonstrated.

Observations in Manitoba suggest that although false stripe may be endemic on experimental plots of barley, it is comparatively rare in farmers' fields. The Canadian observations, confirming those of McKinney, suggest that false stripe has been present for some time at a number of centers of cereal experimentation.

Contents of Previous Issues

The following subjects have already been discussed in earlier issues:

Volume 1. No. 1. The desert locust situation; San José scale in Western Europe; potato blight in Chile; diseases of economic plants in Iraq; progress in plant protection in India.

Volume 1. No. 2. The plant disease situation in the United States; the locust problem in Central America and Mexico; pineapple diseases and pests in Mexico; observations on insect pests in Israel; insect problems in Nicaragua.

Volume 1. No. 3. The migratory locust in South America; the plant disease situation in the United States; two important tree borers in Israel; infestation control in rice; spiny bollworm of cotton in Iraq.

Volume 1. No. 4. Disease outbreaks on economic plants in Italy; Major pests of crops in Afghanistan; Fall webworm in Austria and Yugoslavia in 1952; Plant diseases and insects in the United States; Wheat rusts in Spain in 1952.

The Leaf-Cutting Ants in Bolivia

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THE problem of the leaf–cutting ants of the genus *Atta* has been studied for many years in Bolivia. In 1951 the Department of Plant Protection prepared a special project to investigate these ants with regard to their taxonomic position, geographic distribution and intensity of infestation. Based upon the findings, a general plan for their control has been developed.

Preliminary results of these investigations show that the leaf cutting ants of Santa Cruz belong to the species *Atta laevigata lizeri* Santschi, that *Atta sexdens rubropilosa* Forel occurs in the central zone of the country (Monteagudo) and *Atta sexdens fuscata* Santschi in the northwest (Mapiri). The distribution of these species in the country was found to be extensive, covering an area corresponding to two–thirds of Bolivia.

Species of *Atta* cause considerable losses to agriculture in the central, eastern, north–western and southeastern regions of the country. In many areas farmers have had to abandon their means of livelihood as the ants made all cultivation impossible. As in many other regions of tropical America the Bolivian farmer does not possess sufficient knowledge to protect his crops against this pest.

In pursuing the special project, the Department of Plant Protection, has recently recommended the Government to appropriate special means to protect the interests of the farmer. As part of this program approximately 20 tons of white arsenic and an equal quantity of sulphur were imported in 1952 for use as fumigant, together with 280 Squire blowers for its application.

The Program in Action

The campaign will begin in Santa Cruz, the most important agricultural region of tropical Bolivia. Control units directed by federal technicians will demonstrate how to destroy the nests of the leaf–cutting ants by the commonly adopted method which involves blowing into the nests the vapor generated by burning a mixture of arsenic and sulphur. The technicians will assist the farmers of this region in as many ways as possible and will distribute instructional leaflets to further the campaign.

In 1953, the program of work will be expanded to cover the greatest part of the territory infested with ants of the genus *Atta*. Investigations on biology and other control measures will also be continued.

Outbreaks and New Records

New Zealand

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Stone Fruit Blast

BLAST, caused by a strain of *Pseudomonas syringae* Van Hall, has now become so destructive to stone fruits that its control is regarded as a research problem of major importance.

This disease is most dangerous to stone fruit trees from two to eight years old; older trees are more resistant. The pathogene develops inside the bark, thus producing a ring-barking effect and eventually killing the trees. Over a five-year period, about 60 percent of young trees in the Central Otago District have been killed. As this district produces one-third of the total stone fruit crop in New Zealand, every effort is being made to combat the disease.

Recurrence of Apple Midge

The apple leaf-curling midge, *Dasyneura mali* (Kieff.), was accidentally introduced into New Zealand in 1950 with apple stocks from Holland. At first the midge was restricted to two nurseries in Palmerston North and one in Auckland, and it seemed for a while that the infestation had been exterminated. But in October 1952 the midge reappeared in another nursery in Auckland and, in November, in one in Palmerston North. The effect of this pest on apple crop production in New Zealand is as yet unknown, but the feasibility of eradicating it is being investigated.

Spread of Azalea Leaf Miner

In July 1952 it was reported that the newly-recorded azalea leaf miner, *Gracilaria azaleella* Brants, was found in Auckland and New Plymouth. This insect later found its way across Cook Strait and in November it was discovered at Christchurch in the South Island.

New Records of Cherry Diseases

Two new virus diseases affecting cherries have been recorded recently in New Zealand, namely:

Cherry marbling. This virus disease is found on St. Marguerite cherry. The symptoms are shown on the foliage. This disease is of special interest because, so far as is known, it is different from any of the virus diseases reported on cherries outside New Zealand.

Rasp leaf. This disease affects sweet, sour and mazzard cherries. It is a well-known disease in western United States and has not been recorded elsewhere except in Canada and England.

United States

Bureau of Entomology and Plant Quarantine,
United States Department of Agriculture

Spread of Tomato Russet Mite

Tomato russet mite (*Vasates destructor* [Keif.]), first discovered in the United States in a hothouse in Modesto, California, May 1940, was recorded in 1952 for the first time in Massachusetts, Michigan, New Jersey and Pennsylvania. Damaging infestations on field-grown tomatoes were reported from the latter three states, while the Massachusetts

record consisted of specimens from a greenhouse. This pest, which is now generally distributed in tomato-growing areas of California, also occurs or has been reported from Arizona, Colorado, Nevada, New York, Ohio, Oklahoma, Texas and Utah. Its original habitat and host plants are unknown.

First Record of Pine Needle Scale

Poliaspis pini Mask., a scale insect, was collected on *Pinus* sp. in Baltimore, Maryland in October 1952. This is the first record of this insect in the United States. It has been recorded on several conifer species in Japan and China.

Eradication of Mexican Bean Beetle in California

An intensive eradication program against the Mexican bean beetle (*Epilachna varivestis* Muls.), conducted by the State of California, is now in its sixth year and has involved an expenditure of nearly a million dollars. Operations in 1952 were concentrated in an area of one-mile radius around the last known infestation in the State, which was discovered in the summer of 1950 at Oxnard, Ventura County. This is the only known Mexican bean beetle infestation in the Pacific Coast States, although this pest of beans is widely distributed over most of the remainder of the United States.

PLANT QUARANTINE ANNOUNCEMENTS

France (Overseas Territories)

Law No. 52–1256 of 26 November 1952 relative to the organization of plant protection in the territories for which the French Ministry of Overseas is responsible, was published in the Journal Officiel Vol. 84, No. 282, 27 November 1952. This Order establishes, among other provisions, the following measures to prevent the spread of dangerous plant diseases and pests into French overseas and trust territories.

It is prohibited to introduce, keep or transport knowingly the parasites, in whatever form, known to be dangerous to crops, except with authorization of the Ministry of Overseas for laboratory work. The list of such animal and plant parasites will be established by the Ministry of Overseas for overseas and trust territories after consultation with a committee on plant protection.

Plants, parts of plants, seeds, manures, composts and containers used for their transportation may not be introduced, unless accompanied by a phytosanitary certificate issued by the qualified authority of the country of origin attesting that they are free from all parasites. Containers of plant origin, able to carry dangerous parasites, are subject to the same restriction. A total or partial prohibition of the importation and circulation of products enumerated above may be further declared.

Great Britain

Under the Importation of Plants Orders of 1947 and 1949, a general licence for England and Wales and for Scotland was issued on 10 and 12 October 1952 respectively, authorizing the landing in Great Britain of the under–mentioned living plants grown in any European country, the United States or Canada:

Aquatic plants (ornamental)
Azalea mollis
Campanula
Gloxinia
Impatiens
Kalanchoë
Saintpaulia.

Every consignment landed under this licence shall be accompanied by a health certificate and a certificate giving details of the consignment, in prescribed forms.

India

"Destructive Insects and Pests Act, 1914, and the Rules Made thereunder by the Central Government" was reissued in 1952, incorporating all the amendments so far introduced. The most recent and important amendments governing the import of plant materials are as follows:

(*a*) Potatoes, except those from Burma, must be accompanied by a certificate of origin and an official certificate stating that:
  (*i*) no wart disease (*Synchytrium endobioticum*), golden nematode (*Heterodera rostochiensis*) and Colorado beetle (*Leptinotarsa decemlineata*) have occurred in 12 months within 5 miles of the field where the potatoes were grown;
  (*ii*) the crop was inspected in the field and found to be sufficiently free from virus diseases to be used as seed;
  (*iii*) the consignment was found to be free from any destructive pest or fungus.

(*b*) Unmanufactured tobacco, except imported from Burma or the Kalat State, requires a certificate indicating freedom from *Ephestia elutella* in the country of origin. Without this certificate, imports are permitted through the port of Bombay under prescribed conditions, provided that the tobacco on arrival will be fumigated with HCN or other fumigants.

(*c*) Importation of cotton produced in the West Indies shall be subject to the same restrictions as American cotton.

(*d*) Sunflower seeds are prohibited entry from Argentina and Peru.

(*e*) Bulbs or plants of onion (*Allium cepa*), garlic (*A. sativum*), shallot (*A. ascalonicum*), leek (*A. porrum*), and chive (*A. schoenoprasum*) must be accompanied by a certificate guaranteeing freedom from onion smut (*Urocystis cepulae*).

As concerns inter–state quarantine, notifications have been issued prohibiting the export or transport from the States of Orissa and Travancore–Cochin of banana plants or parts of plants or any articles used in packing them on account of bunchy top disease.

New Zealand

By Notice No. Ag. 5320 dated 12 September 1952, as published in the New Zealand Gazette No. 61, the Acting Director of the Horticulture

Division authorizes the introduction without a permit into New Zealand on and from 26 September 1952, of the nursery stock specified below:

(*a*) all species of cacti (Cactaceae).
(*b*) all species of orchids (Orchidaceae)
(*c*) spawn of common field mushrooms (*Agaricus campestris*).
(*d*) frangipani cuttings (*Plumeria acutifolia* and *P. rubra*).

Republic of the Philippines

Administrative Order No. 5, issued by the Bureau of Plant Industry on 21 July 1952 and published in the Official Gazette Vol. 48, No. 8, contains regulations governing the importation of Irisb potatoes for planting purposes. All persons who intend to import Irish potatoes for propagation are required to file an application with the Bureau on a prescribed form, which is obtainable from the Bureau upon request. The importation of Irish potatoes for purposes other than planting is prohibited. The provisions of this Order became effective on 1 August 1952.

Venezuela

The Ministry of Agriculture by means of Resolution No. 2 of the Bureau of Agriculture, published in Gaceta Oficial No. 23, 14 November 1952, prohibits the importation of seeds, plants and parts of plants of coffee, its products and sub-products. The Federal Government, through the Ministry of Agriculture, will import such materials for experimental purposes. This resolution will be enforced by the plant quarantine inspectors and customs officials.

Agreement on Plant Trade Between Denmark and Federal Germany

An agreement regulating the platn tadre has been concluded between tbe Federal Republic of Germany and Denmark.

The agreement is of a similar nature as the arrangement made in 1946 between the Netherlands and Belgium on the one side and Denmark, Finland, Norway and Sweden on the other, special attention being given to the occurrence of Colorado beetle and San José scale in Germany. The advice of the plant protection services in Finland, Norway, and Sweden was procured during the negotiation of the agreement.

The model phytosanitary certificate annexed to the International Plant Protection Convention of 1951 is adopted as a requirement for the movement of plant materials between the two contracting countries. The agreement also contains provisions concerning the species of plants subject to prohibition, packing conditions and shipping terms, and measures to prevent the spread of the potato wart disease, Colorado beetle, San José scale, and potato root nematode. Federal Germany, north of the Elbe, is considered free from San José scale; plants not otherwise embargoed may be imported from this section to Denmark. Disinfection is a prerequisite for the entry of several species of nursery plants.

NEWS AND NOTES

Vth International Plant Protection Conference in Eastern Europe

The Fifth International Plant Protection Conference, organized by the Eastern European countries, was held in Berlin, from 2 to 14 December 1952. It was attended by the representatives of Albania, Bulgaria, Czechoslovakia, Eastern Germany, Hungary, Poland, Romania and U.S.S.R.

The Conference was devoted to the problems of plant quarantine for the prevention of the spread of plant diseases and pests across the frontiers of the participating countries. It was agreed that the measures against such diseases and pests should be taken in accordance with agreements between the participating governments. These agreements will provide for the application of modern methods of research and of pest control, making use of the published knowledge throughout the world without restrictions.

Olive Fly Meeting

In co–operation with the Government of Italy, FAO will convene a meeting on the olive fly, *Dacus oleae* (Gmel.), in Florence, Italy, from 16 to 21 March 1953. All the countries in the Mediterranean region where this fly is a serious problem have been invited to participate.

The olive fly is the most important pest of olives and, despite all efforts to combat it, causes heavy losses to olive production in respect to both the yield and the quality of edible fruit and oil. Its distribution extends throughout the olive producing areas in Europe, Near East, India and Africa. It is, however, most destructive in the Mediterranean countries.

One method, known as the Berlese method, has been in general use since 1908 for the control of the olive fly and is now still widely adopted in many countries. It consists of spraying the outer periphery of olive trees with a solution of white arsenic and molasses, in order to attract the adult flies to the poisoned molasses. Applications are to be repeated four to six times during the season, depending on the weather and the number of generations of the fly.

Despite its wide adoption, the Berlese method has never been considered satisfactory, mainly because effective control can be achieved only when the infestation is light or the weather conditions are unfavorable to the insect. Under favorable conditions or heavy infestations this method usually affords only very inadequate control.

In view of the increasing demand for cleaner olive crops and with the advent of numerous synthetic insecticides, research workers in many countries have renewed their efforts to find more satisfactory measures for controlling this fly. Fresh impetus has also been given to studies of its ecology, a better understanding of which may serve to explain previous failures in its control and lead to better control techniques. Consequently, the primary objectives of the projected meeting will be the evaluation of recent research results with special reference to their application to field practice and the possible co–ordination of future research activities among participating countries.

The Desert Locust Plague

The following territories were known to be infested by the desert locust during November 1952. In comparison with previous months, the plague has been extended to five new territories, which are indicated by asterisks.

India	Pakistan
Iran	* Kuwait
* Bahrein	Oman
Saudi Arabia	Aden Protectorates
British Somaliland	* French Somaliland
Somalia	Ethiopia
Eritrea	Sudan
* Kenya	* French Chad
French Niger	

Amman Locust Conference

A conference at Amman from 25 to 27 November 1952, convened by the Government of Jordan, to prepare plans for the 1953 anti–locust campaigns in the Near East, was attended by representatives from Egypt, Iraq, Jordan, Lebanon, Saudi Arabia, Syria, Turkey and delegates from Desert Locust Control, United States Point 4 Program and FAO.

All countries and organizations represented reported that they were better equipped than in early 1952 to meet the increasing danger from the desert locust. The conference considered how co–operation between the countries could be further improved and paid particular attention to the rapid exchange of locust information. As one result of the conference, it is hoped to establish a regional reserve of anti–locust equipment and supplies.

Roma - Tipografia del Senato del dott. Giovanni Bardi

CEREAL BREEDING PROCEDURES

This recently published FAO Development Paper covers the whole field from the hybridization of the parent plants until a new variety is in commercial production. Methods of growing hybrid populations, systems of testing and recording of results, variety purification and increase of pure seed, as well as the analysis of data, are treated in detail. Various types of nurseries are described for the breeding of varieties resistant to plant diseases and insect pests, and tolerant to certain climatic factors such as frost.

Special features of the publication are the sixteen appendices which graphically illustrate planting plans, plot arrangements, the statistical progress of a cross, variety purification and other features of a cereal breeding program. The complexity involved in modern plant breeding methods and the consequent necessity of systematizing the procedures are clearly and impressively indicated. 122 pages, $ 1.25; 6 s 3 d.

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